

Claims

This listing of Claims replaces all prior versions and listings of Claims in the application:

Claims

1. (Currently amended) A handling apparatus for groups of thermoformed objects constantly held in a correct axial alignment, said groups of thermoformed objects being arranged in stacks, which apparatus includes at least one pick up and release head having as many receiving seats extending parallel to one another from said head as there are stacks to be handled, and a drive apparatus arranged to move a respective pick up and release head between a stack pick up station and a stack release station of one or more stacks of thermoformed objects and to position it correctly both at the said stack pick up station and at the said stack release station, and comprises at least one mobile pusher member arranged to be moved between, and parallel to, said receiving seats in order to engage a first end of each of said stacks of thermoformed objects located in each receiving seat, and a control drive apparatus for each mobile pusher member, thereby following and holding each stack in said correct axial alignment as a second end of each stack is restrained while each stack is being released from its respective receiving seat.
2. (Previously presented) A handling apparatus as claimed in claim 1, wherein said receiving seats are each delimited by at least three hooking rods having retractable abutting hooks and is characterized in that the said mobile pusher member comprises a frame or grid.

3. (Currently amended) A handling apparatus as claimed in claim 1, wherein said receiving seats are each delimited by a pair of guides ~~[(40)]~~, characterized in that the said mobile pusher member ~~[(21)]~~ comprises a bar or a grid.
4. (Previously presented) A handling apparatus as claimed in claim 1, wherein the said controlled drive means comprises at least one linear actuator.
5. (Currently amended) A handling apparatus as claimed in claim 1, wherein ~~[[at]]~~ the said release or unloading station comprises at least a mobile abutting or resting member and drive means arranged to move the or each mobile resting member to meet and act as a rest for one or more stacks or stack lengths seated and being transferred by said pick up and ~~[[-]]~~ release head and to move in unison with, but at the opposite side with respect to said pusher member, during stack unloading in order to hold the said stacks or stack lengths ~~[[well-]]~~ packed against the said mobile abutting member, whereas the said pick up and ~~[[-]]~~ release head slips off the said stacks or stack lengths.
6. (Previously presented) A handling apparatus as claimed in claim 5, wherein each mobile abutting or resting member comprises a frame or grid.
7. (Previously presented) A handling apparatus as claimed in claim 5, wherein each mobile abutting or resting member comprises an abutting bar or plate.

8. (Currently amended) A handling apparatus as claimed in claim 6, wherein the said mobile abutting or resting member and the said pusher member are movable vertically.
9. (Currently amended) A handling apparatus as claimed in claim 8, wherein at least one of the said pick up station and said release station comprises a receiving plate equipped with vertical receiving guides.
10. (Currently amended) A handling apparatus as claimed in claim 6, wherein the said mobile abutting or resting member ~~[[(31)]]~~ and the said pusher member ~~[[(21)]]~~ are movable in a transverse-common direction transverse to a direction of movement of said stack or stack lengths away from said release or unloading station.
11. (Currently amended) A handling apparatus as claimed in claim 8, wherein the said release or unloading station comprises a tape conveyer ~~[[(13)]]~~ equipped with parallel guides ~~(42, 43)~~ which are adjustable in position and arranged to keep packed stacks ~~[[(4)]]~~ after the same have been unloaded from the said head ~~[[(2)]]~~ and ~~in that~~ wherein at the end of the unloading operation the said pusher member ~~[[(21)]]~~ and the said mobile abutting member ~~[[(31)]]~~ are ~~designed to be arranged in alignment~~ alignment with a respective guide ~~(42, 43)~~ until all the stacks ~~[[(4)]]~~ unloaded onto said conveyer ~~[[(13)]]~~ have been transferred in sliding abutting engagement between the said parallel guides ~~(42, 43)~~.
12. (Previously presented) A handling apparatus for stacks of thermoformed objects held in a desired axial alignment, said handling apparatus including:

(a) at least one pick up and release head having as many receiving seats extending parallel to one another from said head as there are stacks of thermoformed objects to be handled, said at least one pick up and release head having associated elongate members for retaining said thermoformed objects as stacks in the desired axial alignment, the elongate members having cooperating elements for supporting distal ends of each of said stacks;

(b) a drive apparatus arranged to move said at least one pick up and release head between a stack pick up station and a stack release station and to position the stacks of thermoformed objects correctly both at the stack pick up station and at the stack release station; and

(c) at least one mobile pusher member located in each receiving seat and arranged to move relative to said receiving seats in order to (i) engage a proximate end of said stacks of thermoformed objects and (ii) urge the thermoformed objects in each stack into a well packed arrangement while said elongate members are withdrawn adjacent said stacks at said release station.

13. (Previously presented) The handling apparatus of claim 12 wherein the cooperating elements for supporting distal ends of each of said stacks comprise hooks disposed at distal ends of said elongate members.

14. (Previously presented) The handling apparatus of claim 12 wherein the cooperating elements for supporting distal ends of each of said stacks comprise stack supporting surfaces of one or more pusher bars.

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15. (Previously presented) The handling apparatus of claim 13 wherein the elongate members comprise rods.